

**COUNTY OF LOS ANGELES - DEPARTMENT OF HEALTH SERVICES
PUBLIC HEALTH - DISEASE CONTROL PROGRAMS
VETERINARY PUBLIC HEALTH AND RABIES CONTROL**

FMD on the Decline

FMD is the disease that refuses to die in Great Britain. Not long ago, government ministers were predicting the UK's foot-and-mouth outbreak would by now be over. Attempts to eradicate it were "in the home straight", Tony Blair insisted, as the general election neared. With the election past, there is little need to claim that the disease has been defeated. Instead of vanishing, it keeps appearing with new virulence in areas hitherto unaffected.

In one sense, that is no great surprise. There is still confusion about the exact numbers of sheep which passed through Longtown market in Cumbria last February, when foot-and-mouth disease was beginning to spread. So animals from Longtown may still be spreading the virus without anyone's knowledge. Margaret Beckett, who heads the newly created Department for Environment, Food and Rural Affairs (Defra) is now in charge of eradicating FMD. Mrs Beckett and her team have an opportunity to win back confidence, despite the mistakes of their predecessors. But they will have to move fast. The disease has destroyed farming (**Figure 1**) and wrecked British tourism.



Figure 1 Foot-and-mouth disease in Great Britain. There are close to 1,800 confirmed FMD cases and over three million livestock have been culled to prevent the epidemic from spreading. With the

outbreak on the decline, restrictions were lifted in 37 infected areas.

Blood testing is currently being carried out on hundreds of animals by the Institute for Animal Health in Surrey to obtain an overview of the FMD epidemic and how long the culling policy will be needed to eradicate the disease. The virus is being detected in greater intensity and numbers than first thought - often in sheep where physical symptoms are missed. The tail of the epidemic may be far longer than people had hoped. In the United Kingdom there are still about four FMD outbreaks a day, down from a high of 40 a day at the epidemic's peak.

In 1980 there were 597 government veterinarians - but now there are fewer than half that figure. President of the British Veterinary Association David Tyson said: "We could be looking at a shortfall of 80 to 100 veterinary posts . . . in those farm animal practices."

When the FMD epidemic began, the Government drafted in 1,500 extra veterinarians to work as temporary veterinary inspectors. With the epidemic on the decline veterinarians tackling the foot-and-mouth virus fear loss of their jobs as the crisis abates. Having fewer veterinarians will affect animal disease control. The Royal Society for the Prevention of Cruelty to Animals is concerned that having fewer veterinarians will affect the monitoring of animal welfare, and has called for an agricultural inspection system.

With about eight percent of Great Britain's livestock population destroyed since February there are fewer animals for British large animal veterinarians to treat unless there is significant restocking now. Even before the outbreak, farmers were calling veterinarians out less often because they could not afford to pay them.

Veterinarians found surprises on farms during the FMD cull. For example, sheep scab or psoroptic mange (*Psoroptes ovis*), a reportable disease was thought to have been eradicated, nonetheless it appears fairly widespread in the national flock. The United States's last reported cases of sheep scab were over thirty years ago. Sheep scab typically develops on the wooly parts of the body while sarcoptic mange affects the nonwooly skin, usually starting on the head and face.

New Outbreak of FMD in Devon the Second Week of June

A new outbreak of foot-and-mouth, detected the second week of June in Devon, raised fears the "tail" of the disease in the United Kingdom could be longer than expected. Devon was originally one of the worst affected counties in the country, but had only a handful of new cases over the previous month. The 169th confirmed case in the county was called "disappointing and worrying" by the National Farmers' Union. The outbreak was in an area where there had been no previous disease, and where none was expected. There was no obvious connection with any other outbreak, although there was an unproven theory that the disease might have been caught by cattle from sheep, in which it was dormant.

A fresh foot-and-mouth hotspot was seen on the Devon and Somerset border. A Lancashire village lost its entire farming industry to foot-and-mouth disease. The hamlet has a population of fewer than 60 people. Recent hotspots in North Yorkshire and Lancashire destroyed optimism generated by the general nationwide decline in new cases. New hotspots heighten farmers' fears that the current slaughter policy will not completely wipe out the disease. Some farmers fear major new outbreaks in the autumn when conditions are more favorable for the virus.

A total of more than 9,500 sheep and cattle are involved in the four confirmed outbreaks and contiguous culls, said the Department for the Environment, Food and Rural Affairs (Defra). Army units have been recalled to tackle the outbreak and help arrange for disposal of culled animals. The RSPCA has closed-off a rescue center for several hundred abandoned or abused animals at West Hatch, near Taunton. No animals will be taken in or re-homed until the area is clear of the disease.

New Department of the Environment, Food and Rural Affairs(Defra)

With farming and the countryside in the United Kingdom in deep trouble and environmental problems, a new ministry was created following Tony Blair's landslide election. By creating Defra, Tony Blair in one stroke got rid of Maff (Ministry of Agriculture, Fisheries and Food), and DETR (Department of the Environment, Transport and the Regions). DETR was an unwieldy ministry. It failed to make any noticeable impact on the UK's arthritic transport system and it also drew criticism for its handling of the trials of genetically-modified crops. Margaret Beckett was appointed to head the newly formed Defra. Critics are waiting to see if the new department will function independently of the old ministries or just be a new face on an old body.

Maff lacked public support and was widely seen as the friend of agri-business. It was criticized for failing to act as the champion of consumers and the environment. For example, Maff is accused of underestimating the devastation of the foot-and-mouth crisis, and at the same time of grotesquely over-reacting to it, slaughtering millions of animals which should have been spared. It was also blamed for failing to act decisively against BSE, commonly known as mad cow disease.

Case of BSE Feared in 14-Year-Old Girl

The Guardian reported on June 21, 2001 that physicians suspect vCJD in a 14-year-old girl. This may be the first victim of the human form of BSE born after the condition was officially recognized in cattle. All those identified as having variant CJD - 102 in Britain, three in France, one in Ireland and one suspected in Hong Kong - were born before November 1986, when pathologists at the government's veterinary laboratories first identified BSE.

The death toll from vCJD, though relatively low still, has been growing rapidly in Britain. The first victim died in May 1995. By last June, 60 had died and 10 were still alive. Now 94 are dead and eight alive. The Irish victim and the woman still living in Hong Kong and thought to have the disease both

spent some time in Britain, whereas none of the French victims had done so. This suggested either, they ate contaminated imported meat or meat from French cows that were infected through imported feed, or from an undisclosed native epidemic.

After ministers were notified of BSE in June 1987, Maff and politicians spent years first saying there was no risk, and then minimal risk, to humans from eating contaminated cattle tissues. Brain, spinal cord and other offal were banned from the food chain in 1989. Nonetheless, the ban may not have been properly enforced. Meat was removed from cattle bones containing nervous tissue and was allowed into cheap beef pies, sausages and burgers until 1995. At least one manufacturer also used it in baby foods during the 1980s. In March 1996, a probable link was reported in medical journals with the first cases of vCJD.

Video Auction is a Hit with Farmers in FMD Area

A video livestock auction for dozens of farmers affected by the foot-and-mouth crisis in Wales was a big success. Livestock markets last held in the area more than three months ago were poorly attended. Organizers of the video event said it was a positive move towards rebuilding the shattered confidence of farmers, who had been unable to buy and sell animals in the normal way. Auctioneers Clee, Tompkinson and Francis spent weeks videoing cattle at 46 farms to compile an on-screen catalogue for sale at the auction. Farmers wanting to replace slaughtered livestock were invited to Llandovery rugby club, which was turned into a "virtual market" for the night.

There are hopes that the auction's success could lead to the venture spreading to other areas of Wales. The "virtual market" for dozens of farmers affected by FMD in Wales proved a hit and organizers planned another event for the first of July. But Welsh Assembly Rural Affairs Minister Carwyn Jones warned the venture was "premature" and put at risk the strict guidelines on preventing the spread of FMD. Welsh Rural Affairs Minister Carwyn Jones has called on auctioneers not to go ahead with a second video livestock auction.

Genes Could Save Great Britain's Rare Sheep

The second week of June, a Lancashire farmer called for government veterinarians to widen their collection of gene samples to prevent rare sheep being wiped out by foot-and-mouth. Veterinarians for the Heritage Gene Bank, at York University, have already taken samples from Mr Lister's flock and are due to visit other Lonk farms in Oldham, Greater Manchester. The Heritage Gene Bank was set up in April to preserve and rebuild Britain's rare sheep breeds after the foot-and-mouth epidemic. The ancient Lonk breed of mountain sheep is only found in Lancashire and Derbyshire. The Lonk are thought to have once been farmed by the monks of Whalley and Sawley Abbey. The animal is outstandingly hardy, spending the winter on bleak moors in punishing conditions.

Farmers' Suicides' Linked to FMD

A coroner's inquest the second week of June linked the suicides of two farmers with the pressures of the foot-and-mouth crisis. One farmer died from a single gunshot to the head. The other farmer hung himself with a chain. It is hoped that the farming organizations will find some way to reach out to the farming community and to support depressed farmers and their families. A House of Lords report states that suicide is one of the most likely causes of death among older farmers. A third inquest in Welshpool revealed the suicide of another farmer was as a result of the BSE crisis causing him to suffer a breakdown.

"What has been a crisis for the farming industry has been a catastrophe for the family's of the three decent men," Coroner John Hollis said.

Farm Leaders Admit FMD Mistakes

The deputy director-general of the National Farmers' Union (NFU) in England and Wales has admitted his organization made mistakes in handling the foot-and-mouth crisis. His comments come as some farmers say the NFU has become too close to the government and no longer fully represents the industry. For a period of time members of some smaller farming organizations have accused the NFU of failing to provide a distinct and critical voice of the government's handling of the crisis.

The NFU vigorously opposed any vaccination policy when the disease was at its height and was accused of ignoring the views of some farmers, including NFU members, who would have supported such plans. Anthony Gibson, regional director for the National Farmers' Union, recently told BBC Radio the government should have a contingency vaccination plan.

Administrators Have Difficulty Dealing with Scientific Advice

Scientists believe FMD has exposed serious weaknesses in the way scientific advice is sought and used by administrators. On June 13, one of the UK's leading food safety experts blamed the government for the scale of diseases such as BSE, foot-and-mouth and *e. coli*. Professor Hugh Pennington said the lessons of the outbreaks had still not been learned, warning that without "root-and-branch reform" another disaster was waiting to happen. His biggest worry was that government ministers were simply not capable of understanding the scientific advice they were given.

New Director of Defra Promises Co-operation and Openness

On June 16, Margaret Beckett, Director of the new Defra, promised a culture of co-operation and openness. She said her first priority was to eradicate foot-and-mouth disease, followed by a heavy emphasis on regeneration of the countryside in the wake of the outbreak. Ideas for the countryside that have already been discussed include paying farmers for maintaining wildlife habitats on their land, rather than concentrating solely on intensive production. Mrs Beckett indicated this shift would form the background for discussions on reform of the Common Agricultural Policy and made it clear she felt

Britain would be "leading the pack" in pursuing such reform along greener lines.

The UK government backed down from a move to force all farmers affected by the foot-and-mouth outbreak to sign the Official Secrets Act. The reversal comes after the farmer at the center of the outbreak of the disease in Heddon-on-the-Wall, Bobby Waugh, said that signing would compromise his ability to fight impending prosecution from trading standards. Mr. Waugh's farm, Heddon-on-the-Wall, is where the FMD outbreak was officially identified. Critics hope this demonstrates Defra's openness.

Healthy Livestock Face Winter Starvation With Travel Restrictions

The third week of this month Margaret Beckett, head Defra, went to listen to farmers in the Yorkshire Dales area. The farmers are in shock from the loss sheep and cattle which have been their life's work. Several demonstrators called for vaccination of sheep and cattle. Mrs. Beckett was given a stark warning by a farmer's leader she met during her daylong visit. The regional director of the National Farmers' Union, Richard Ellison, said the movement of healthy animals in the area is at a standstill. With grazing limited, by the autumn; further mass culls of sheep and cattle may be necessary on humanitarian grounds to avoid starvation of the livestock during the winter.

Farmers Face Five-Year Export Ban

Farmers have been warned that the export market could be closed for five years in the wake of foot-and-mouth epidemic. Welsh sheep farmers are heavily dependent on exports, and farming unions are already worried about the glut of lambs which will flood the home market later this year. Welsh Rural Affairs Minister Carwyn Jones has said that is the price the agricultural industry could have to pay if livestock markets were to be reopened too soon. If markets are kept closed until next year, exports might be able to begin the end of 2002. However, until then, people won't have the income they would get from normal trading. A delay in reopening the export market is an upsetting prospect for many.

Sheep Shearer Shortage Puts Animals at Risk

The number of sheep shearers working in Britain this season has been cut by half due to the foot-and-mouth crisis. There are normally 750 sheep shearers working in Britain during the summer season. Of immediate concern is the risk of exhaustion and disease of heavily woolled sheep if they are not shorn. As well as being at risk of overheating and becoming entangled in hedges, unshorn sheep can become infested with maggots.

Most shearers travel to the UK from Australia and New Zealand, but the FMD outbreak has dissuaded many from making the journey. Many workers are being put off, not only because they fear taking the disease back to their own country, but because of the bureaucracy introduced in the wake of the outbreak. Shearers are required to apply for two different types of licenses, depending on whether he

is working in an infected area or not.

FMD Restrictions Relaxed

The government has lifted some of the restrictions on the movement of livestock imposed during the foot-and-mouth crisis. Margaret Beckett, Secretary of State at the new Department of Environment, Food and Rural Affairs, announced the move June 21, 2001 as she updated MPs on the latest progress in the battle against the disease. She said that some mistakes had been made and the battle to eradicate the virus had not yet been won.

Mrs Beckett also outlined plans to lift local councils' blanket footpath closures in an effort to ensure the British countryside is largely open for business ahead of the busy summer holiday season. Over half of all paths were now open, but some remained closed. It was difficult to see why, said Mrs Beckett. She explained the government was now looking to revoke remaining blanket closures, although it would closely examine local representations. Mrs Beckett said restrictions were lifted in 37 infected areas. This involved 43,000 farms - one third of all those affected. The tourism industry was pleased with the announcement.

Shepherds May be Used to Re-Establish Hefted Sheep

Shepherds could be hired to restore flocks of sheep to areas stripped bare by foot-and-mouth disease culling, a government official announced June 22, 2001. The offer came as four new outbreaks of FMD were confirmed in Cumbria. Hefted sheep are those which have acquired an instinct, passed down through generations of animals in each flock, to roam freely within a defined but unfenced territory of the fells. Without this knowledge, they cannot be managed without barriers. It could take between five and ten years to "teach" a flock to roam within a set territory but most farmers can no longer afford to employ their own shepherds. While farmers can cope with most routine work themselves, they cannot spare the time to re-establish flocks that will need constant rounding-up and re-positioning on the fells. An alternative is to provide shepherds since building fences around a territory might not be possible on common land.

New Sensor Detects FMD Within Seconds

Currently detecting the virus that causes foot-and-mouth disease typically requires hours and a trip to the laboratory, nonetheless technology is changing. This month, *Technology Review* (Talbot, D Sensitive cells. June 2001, Vol. 104 Issue 5, p30) reported on the development of "Canary", a sensor that can detect tiny amounts of the virus that causes foot-and-mouth disease from a raw sample of blood, saliva or even air.

Engineers at MIT's Lincoln Laboratory are developing a portable sensor to spot the virus in seconds. This will allow rapid testing of millions of animals or other items. The core of the sensor, dubbed

Canary, is a dime-sized glass chip that can detect tiny amounts of the virus from a raw sample of blood, saliva or even air, says inventor Todd Rider. Rider says it is the first pathogen detector to use white blood cells, which are naturally sensitive to viruses and bacteria. The researchers inserted two genes into white blood cells from mice. The first gene produces an antibody on the cell's surface that binds only to the foot-and-mouth virus. When that binding occurs, a second inserted jellyfish gene makes the cells glow.

When the Lincoln Laboratory group tested Canary's speed against a United States strain of the foot-and-mouth virus, the sensor produced results in 25 seconds. Now, the researchers are genetically engineering cells to detect the European strain, a project they expect to complete by early summer. The United States Department of Agriculture is exploring the idea of using the device at airports and border stations.

Researchers have also engineered the device to detect several potential biological warfare agents; in theory, says Rider, it could be designed to sense any live pathogen. "You could walk into the doctor's office, cough on something and get an instant diagnosis."